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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/670,432	09/23/2003	Rodger H. Rast	Display_RAST092303	2421

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EXAMINER	
LUI, DONNA V	

ART UNIT	PAPER NUMBER
2629	

DATE MAILED: 07/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/670,432	RAST, RODGER H.	
	Examiner	Art Unit	
	Donna V. Lui	2629	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *19 August 2005*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-20* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-20* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *23 September 2003* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

1. **Claim 19** is rejected under 35 U.S.C. 102(e) as being anticipated by Sekiya et al. (Patent No.: US 6,583,775 B1).

With respect to **Claim 19**, Sekiya teaches a method of controlling a display element within an array of display elements *(See figures 1 and 2, elements PXL)* by utilizing row and column signals *(See figure 2, element 21: row signals and element 22: column signals)* separate from a power bus being applied to the display elements, comprising: integrating a control circuit *(See figure 1, TFT1)* within a display element; detecting the presence of an activation signal *(column 10, lines 64-67; note that the control circuit TFT1 provides data through selection of lines X and Y, which is equivalent to an activation signal, for write brightness to the capacitor Cs: the activation signal detector. The capacitor is later discharged to continue to provide light emission even though the activation signal through TFT1 is no longer provided)* between the row and column lines by the control circuit; and directing power *(See figure 1, Vdd)* from a power bus by the control circuit to the display element for a predetermined interval following the

detected signal *(column 11, lines 4-9; the predetermined interval is the time when the capacitor is discharged)*.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. **Claims 1-8 and 10-18** are rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiya et al (Patent No.: US 6,583,775 B1).

With respect to **Claim 1**, Sekiya discloses a method of controlling a display element within an array of display elements *(See figure 2, display elements: PXL)* by utilizing row *(See figure 2, element 21)* and column signals *(See figure 2, element 22)*. Sekiya teaches the method to comprise: integrating a control circuit *(See figure 1, TFT2)* within a display element *(See figure 1, OLED)* wherein the row and column lines are operably connected to the control circuit, which connects to the display element *(the connection of the row and column lines to the display element is through TFT1 and TFT2)*; maintaining a sufficient power on the row and column lines for continuously powering the control circuit and associated display element *(See figure 1, element Y; column 11, line 62 to column 12, line 6; note that the data line, Y supplies a sufficient amount of power to the display element through the control circuit in synchronism with the line scanning of X continuously for a duration corresponding to brightness information for the*

display element); communicating an activation signal between the row and column lines to which the control circuit is connected; activating the display element upon receipt of the activation signal by the control circuit *(See figure 1, TFT1; note that TFT1 communicates an activation signal to the control circuit through synchronized selection of elements X (row) and Y (column); the display element is activated through the supply of brightness information)*; and maintaining the display element activation by the control circuit from the power on the row and column lines for a predetermined duration after the activation signal is no longer being received *(column 11, lines 4-9; the predetermined duration is the time when the capacitor is discharged)*.

Although Sekiya does not explicitly state maintaining a sufficient power on the row and column lines for continuously powering the control circuit and associated display element, Sekiya teaches a capacitor for storing brightness information and supplying a brightness value to the control circuit for keeping the OLED in a lit state when the scanning line X is placed in a non-selected state *(column 10, line 64 to column 11, line 9)*. Sekiya's teaching of the capacitor is equivalent to maintaining a sufficient power on the row and column lines for continuously powering the control circuit and associated display element since the capacitor continues to supply information even when the scanning line X is non-selected, thus maintaining a continuous powering of the control circuit.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to use a capacitor for maintaining power the continuous powering of the control circuit and the associated display element so as to provide an image display free from blanking that results from a delayed and discontinued supply of image data.

With respect to **Claim 14**, a display element *(See figure 2, display elements: PXL)* configured for being connected to a set of row and column addressing lines *(See figure 2, element 21: row, and element 22: column)*, comprising: a visual output element *(See figure 1, OLED)* adapted for displaying at least two states within a display element *(two states: light emission- ON and non-light emission- OFF)*; a control circuit *(See figure 1, TFT1; connected to the row X through the gate G and connected to the column Y through the source S; connected to the visual output element through the drain D which in turn is connected to TFT2 which in turn is connected to the anode of the OLED)* within the display element which is adapted for connecting between a single row and a single column within the set of row and column addressing lines, and the visual output element; an activation signal detector *(column 10, lines 64-67; the activation signal detector is equivalent to the capacitor Cs which detects a signal by storing brightness information)* within the control circuit, the activation signal detector being adapted for detecting an activation signal on the row and the column lines *(column 10, line 67 to column 11, line 4)*; and a visual output element driver *(See figure 1, TFT2)* within the control circuit, the visual output element driver being adapted for driving the visual output element from power received between the row and column lines *(column 10, lines 64-67; note that the power received between the row and column lines is through TFT1 and then through connection to the gate of TFT2)*; the control circuit being adapted to activate the visual output element driver *(column 10, lines 64-67; note that the control circuit TFT1 provides data, which is equivalent to an activation signal, for write brightness to the capacitor Cs: the activation signal detector. The capacitor is later discharged to continue to provide light emission even though the activation signal through TFT1 is no longer provided. Providing write brightness is equivalent to adapted*

to activate) to supply power to the visual output element upon detection of an activation signal from the activation signal detector and to continue supplying the power for a predetermined duration after the activation signal is no longer present *(column 11, lines 4-9; the predetermined duration is the time when the capacitor is discharged).*

Although Sekiya does not explicitly state a control circuit adapted to activate the visual output element driver to supply power to the visual output element upon detection of an activation signal from the activation signal detector and to continue supplying the power for a predetermined duration after the activation signal is no longer present, Sekiya teaches TFT1, the signal from the drain of TFT1, TFT2, Cs and OLED as equivalent to the control circuit, the activation signal, the visual output element driver, the activation signal detector and the display element respectively. Sekiya teaches the capacitor for storing brightness information and supplying a brightness value to the control circuit for keeping the OLED in a lit state when the scanning line X is placed in a non-selected state *(column 10, line 64 to column 11, line 9)*, which is equivalent to continuing the supply of power after the activation signal is no longer present since TFT1 no longer activated.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to have a control circuit to provide such an adaptation through the use of a capacitor so as to provide an image display free from blanking that results from a delayed and discontinued supply of image data.

With respect to **Claim 2**, a method as recited in claim 1, Sekiya teaches the display element contains at least one light emitting diode *(column 10, lines 53-55).*

With respect to **Claim 3**, a method as recited in claim 1, Sekiya teaches the activation signal comprises a sufficient change in voltage across the row and column lines to be detected by the control circuit *(column 11, line 62 to column 12, line 6; See figure 1, note that both X and Y must be selected at the same time for a particular LED to emit light, which corresponds to a change in voltage; See figure 3 where a particular row is selected based on a voltage change from low level to a high level, the same applies for the columns).*

With respect to **Claim 4**, a method as recited in claim 3, Sekiya teaches the activation signal comprises transitions in the signal between the row and column which are identified by the control circuit as an activation signal *(See the rejection of claim 3, where the terms "transitions in the signal" and "identified by" are equivalent to "a sufficient change in voltage" and "detected by" respectively).*

With respect to **Claim 5**, a method as recited in claim 1, Sekiya teaches the predetermined duration comprises a time period bounded by the receipt of a subsequent signal *(column 11, lines 18-39; the receipt of a subsequent signal is the stopping control line: Z).*

With respect to **Claim 6**, a method as recited in claim 5, Sekiya teaches the subsequent signal comprises a signal associated with a subsequent scan of the display element for setting it to a new state *(column 11, lines 34-39; the signal associated with a subsequent scan is the scanning line X, note that the old state is light emission and the new state is no light emission).*

With respect to **Claim 7**, a method as recited in claim 6, Sekiya teaches the subsequent signal comprises a row signal transitioning from a first state to a second state *(column 11, lines 25-29 and lines 34-39; the control line Z, provided in parallel to scanning line X, determines the states of the pixels, the first state being light emission (Z is not selected) and the second state being non-light emission (Z is selected), in order for light emission the scanning line X must transition from a non-selected state to a selected state: first state, in order for non-light emission the scanning line X must transition from a selected state to a non-selected state: second state).*

With respect to **Claim 8**, a method as recited in claim 6, Sekiya teaches the subsequent signal comprises a column signal transitioning from a first state to a second state *(column 10, line 67 to column 11, line4; column 11, lines 25-29 and lines 34-39; note that the data line provides a data signal at the same time scanning line X is selected; the control line Z, provided in parallel to scanning line X, determines the states of the pixels, the first state being light emission (Z is not selected) and the second state being non-light emission (Z is selected), in order for light emission the data line Y must transition from not providing to providing brightness information: first state, in order for non-light emission the data line Y must transition from providing to not providing brightness information: second state).*

With respect to **Claim 10**, a method as recited in claim 1, Sekiya teaches the predetermined duration comprises a predetermined time value as determined by the control circuit configuration *(column 12, lines 27-31; note that the control circuit comprises a stopping*

control signal which determines the predetermined duration: the time when the capacitor is discharged).

With respect to **Claim 11**, a method as recited in claim 1, Sekiya teaches the predetermined duration comprises a duration value programmed in response to the signal relationships between the row and column lines *(column 12, lines 27-31; in order for a pixel to emit light the scanning line X and data line Y must be selected and the capacitor is charged, the start of the selection of X and Y is the beginning of the predetermined duration until the stopping control signal is selected; note that the control circuit comprises a stopping control signal which is used for determining the end time of the predetermined duration: the time when the capacitor is completely discharged).*

With respect to **Claim 12**, a method as recited in claim 11, Sekiya teaches the predetermined duration comprises the duration of the column signals while the row signals are active *(column 10, line 67 to column 11, line 4; column 11, line 62 to column 12, line 6; note that the scanning line X is selected in synchronism with data line Y and therefore the duration of the column signals are selected while the row signals are active).*

With respect to **Claim 13**, a method as recited in claim 11, Sekiya teaches the predetermined duration comprises the duration of the row signals while the column signals are active *(column 10, line 67 to column 11, line 4; column 11, line 62 to column 12, line 6; note that the scanning line X is selected in synchronism with data line Y and therefore the duration of the*

row signals are selected while the column signals are active).

With respect to **Claim 15**, a display element as recited in claim 14, Sekiya teaches the visual output element comprises at least one light emitting diode *(column 10, lines 53-55).*

With respect to **Claim 16**, a display element as recited in claim 14, Sekiya teaches a reset signal detector *(See figure 1, TFT3)* within the control circuit; wherein upon detecting a reset signal *(See figure 1, element Z; note that Z is connected to the row and column lines through TFT3 and TFT1)* on the row and the column lines the control circuit deactivates the visual output element driver to discontinue supplying power to the visual output element *(column 11, lines 25-39).*

With respect to **Claim 17**, a display element as recited in claim 14, Sekiya teaches the activation *(See figure 1, activation signals are equivalent to data signals: Y; column 11, line 62-66)* and reset signals *(See figure 1, reset signals are equivalent to stopping control signals: Z; column 11, lines 29-34)* are conveyed as changes in voltage potential between the row and column lines *(changes in potential is equivalent to selection and non-selection of Y and Z).*

3. **Claim 18** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiya in view of Battersby (Patent No.: US 6,448,718 B1).

With respect to **Claim 18**, a system *(See figure 2)* for displaying visual information on an array of display elements interconnected on a grid of row and column address lines, comprising: a row and column driver circuit *(See figure 1, element 21: row and element 22: column)* adapted for activating selected display elements within the array in response to signals received from an image controller *(See figure 1, controller is equivalent to TFT1, TFT2, and TFT3; column 11, lines 48-53 and line 62 to column 12, line 6)*; the row and column driver adapted for outputting a sufficient continuous power between the row and column and superimposing control signals thereupon for controlling the activating of the selecting display elements *(See figure 1, element Y; column 11, line 62 to column 12, line 6; note that the data line, Y supplies a sufficient continuous amount of power to the display element through the control circuit. Data line Y is selected in synchronism with scanning line X for controlling the activating and duration of the display elements)*; a display element *(See figure 2, element PXL)* adapted with a element control circuit *(See figure 1, element TFT1)* interposed between the connection to the row *(See figure 1, element X)* and column *(See figure 1, element Y)* lines and a visual output element *(See figure 1, element OLED; note that the control circuit is connected to the OLED through TFT2)*; the element control circuit adapted for activating the visual output element in response to controlling signals received over the row and column lines from the row and column driver circuit *(column 10, lines 60-63; the controlling signals being received from the data line Y and scanning line X)* and maintaining the visual output element in an active state for a predetermined duration while other rows and columns of display elements are being activated *(column 11, lines 4-9; maintaining the visual output element in an active state is equivalent to holding brightness*

information in a capacitor Cs and discharging for light emission after scanning line X is non-selected; the predetermined duration is the time when the capacitor is discharged).

Sekiya does not mention the system for displaying visual information on a multiplexed array of display elements.

Battersby teaches a system for displaying visual information on a multiplexed array of display elements *(See figure 4; column 6, lines 28-35; column 8, lines 47-50).*

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to have a system for displaying visual information on a multiplexed array of display elements, as taught by Battersby, to the system of Sekiya so as to provide a reduction of the number of drive IC's required and to reduce the time allowed to supply each pixel in a group with its data signal.

4. **Claim 9** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiya as applied to claim 1 above, and further in view of Kishita et al. (Patent No.: US 6,593,919 B1).

With respect to **Claim 9**, a method as recited in claim 1, Sekiya does not teach the predetermined duration comprises a count value received from the row and column lines by the controller, that is modified toward a terminating count value.

Kishita teaches the predetermined duration *(the time for performing line-sequential scanning)* comprises a count value *(data signal)* received from the row and column lines by the controller *(column 6, lines 31-37)*, that is modified toward a terminating count value *(column 6, lines 39-43 and lines 47-49; the terminating count value is equivalent to 255).*

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to have a predetermined duration to comprise a count value received from the row and column lines by the controller, that is modified toward a terminating count value, as taught by Kishita, to the method of controlling a display element of Sekiya, so as to suppress the occurrence of a shadowing phenomenon, controlling the application time to provide an optimum state *(Kishita: column 3, lines 32-43)*.

5. **Claim 20** is rejected under 35 U.S.C. 103(a) as being unpatentable over Sekiya as applied to claim19 above, and further in view of Inoue et al. (Pub. No.: US 2003/0142047 A1).

With respect to **Claim 20**, a method as recited in claim 19, Sekiya does not teach the activation signal is detected as an electric field potential generated between the row and the column sufficiently proximal to the control circuit to be registered therein; wherein the row and column signals are provided on a wiring grid retained in a substantially fixed position in relation to the display element.

Inoue teaches an activation signal is detected as an electric field potential generated between the row and the column sufficiently proximal to the control circuit *(See figure 2, element 27; [0058] and [0059], lines 1-6)* to be registered therein *([0057], lines 16-22; note that the first horizontal scanning line is applied at the same time the first vertical scanning line is activated, therefore the electric field potential is generated due to the row and column)*; wherein the row and column signals are provided on a wiring grid retained in a substantially fixed position in relation to the display element *(See figure 2; the wiring grid is equivalent to the first*

and second horizontal and vertical scanning lines; the row signals are equivalent to the horizontal scanning lines and the column signals are equivalent to the vertical scanning lines; the grid is retained in a substantially fixed position in relation to the display element because each pixel is designated between a set of vertical and horizontal scanning lines and therefore does not change position).

Inoue modifies the circuit of Sekiya *(See figure 1)* by inserting a transistor between the gate of TFT1 and Vdd of Sekiya such that the gate of the transistor is intermediate a photo-detecting element and resistor. The other end of the photo-detecting element is connected to the data line Y and the other end of the resistor is connected to Vdd.

It would have been obvious for a person of ordinary skill in the art at the time the invention was made to have an activation signal detected as an electric field potential generated between the row and the column sufficiently proximal to the control circuit to be registered therein, as taught by Inoue, to the method of controlling a display element of Sekiya, so as to correct the threshold voltage of a transistor and suppress a variation in luminance *(Inoue: [0023]).*

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donna V. Lui whose telephone number is (571) 272-4920. The examiner can normally be reached on Monday through Friday 8:30 a.m. - 5:00 p.m..

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Amr Awad can be reached on (571)272-7764. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

Donna V Lui
Examiner
Art Unit 2629

AMR A. AWAD
PRIMARY EXAMINER